WHAT IS CLAIMED IS:

1. An emergency vehicle traffic control system comprising;

intersection control hardware at each intersection for preemption and control of traffic signals;

an emergency vehicle transponder for gathering navigation data to predict heading and position of said emergency vehicle;

a warning display at each intersection alerting vehicles and pedestrians of approaching emergency vehicle;

a communications and operations network for connecting said intersection control hardware at each intersection with said emergency vehicle transponder in each emergency vehicle to collect and transmit real-time data regarding intersection status, emergency vehicle direction and location and activation of said display at each intersection;

whereby said emergency vehicle traffic signal control system controls preemption of traffic signals at selected intersection autonomously by transmissions to and from said emergency vehicle and said intersections.

2. An emergency vehicle traffic control system according to Claim 1 in which said intersection control hardware includes an intersection monitor module at each intersection providing real-time monitoring of the status of each intersection.

3. An emergency vehicle traffic control system according to Claim 2 in which said intersection monitor provides real-

time monitoring of timing, phasing used for ETA calculations.

4.   An emergency vehicle traffic control system according to Claim 1 including a warning alert control module at each intersection for activation of said warning displays at each intersection.

5.   An emergency vehicle traffic control system in which said warning alert control module at each intersection activates both visual and audio alerts.

6.   An emergency vehicle traffic control system according to Claim 1 including an intersection control module providing ETA timing for preemption of traffic signals from emergency vehicle positions and local mapping topography.

7.   An emergency vehicle traffic control system according to Claim 6 in which said intersection control module tracks and logs emergency vehicles.

8.   An emergency vehicle traffic control system according to Claim 6 in which said intersection control module actuates and verifies traffic signal preemption signals.

9.   An emergency vehicle traffic control system according to Claim 1 in which said communications and operations network includes slave transceivers in each emergency vehicle to relay core preemption status and configuration data to a backbone network.

10.   An emergency vehicle traffic control system according

to Claim 9 in which said backbone network routes data between mobile wireless emergency vehicles, isolated wireless intersections and a central operations center.

11. An emergency vehicle traffic control system according to Claim 10 in which said communications and operations network includes a program for processing and displaying all real-time data generated by said intersections and emergency vehicles generated by said intersections and emergency vehicles.

12. An emergency vehicle traffic control system according to Claim 11 in which said program for processing and displaying all real-time data processes and displays emergency vehicle positions, speed, phasing, preemption status, vehicle diagnostics, logged information, and configuration data.

13. An emergency vehicle traffic control system according to Claim 2 in which said intersection status monitor is a real-time status monitor; said real-time status monitor verifying the status of traffic and pedestrian signals and sending the status of said intersection to an intersection control module.

14. An emergency vehicle traffic control system according to Claim 13 in which said real-time status monitor receives an output from a traffic light controller and pedestrian lights and transmits said output to an intersection control module.

15. An emergency vehicle traffic control system according to Claim 14 in which said emergency vehicle transponder

includes a vehicle transponder control module receiving inputs from a real-time navigation module, a vehicle status module, a local transceiver, and a master transceiver.

16. An emergency vehicle traffic control system according to Claim 15 in which said vehicle navigation module provides emergency vehicle position data.

17. An emergency vehicle traffic control system according to Claim 16 in which said emergency vehicle position data is derived from an inertial navigation unit.

18. An emergency vehicle traffic control system according to Claim 16 in which said emergency vehicle position data is derived from a global positioning system.

19. An emergency vehicle traffic control system according to Claim 16 including an in-vehicle computer providing vehicle speed and acceleration to said emergency vehicle transponder.

20. An emergency vehicle traffic control system according to Claim 16 in which said local transceiver is a wireless transceiver communicating with said intersections.

21. An emergency vehicle traffic control system according to Claim 16 in which said master transceiver transmits emergency vehicle status to and from said communications and operations network.

22. An emergency vehicle traffic control system according to Claim 20 including an in-vehicle display for displaying

feedback of incoming intersection preemption alerts and vehicle position reports from nearby emergency vehicles.

23. An emergency vehicle traffic control system according to Claim 22 in which said in-vehicle display comprises a plurality of lights to indicate incoming of preempt alerts and vehicle reports from nearby emergency vehicles.

24. An emergency vehicle traffic control system according to Claim 23 in which said plurality of lights comprises a plurality of light emitting diodes.

25. An emergency vehicle traffic control system according to Claim 24 in which said plurality of light emitting diodes comprise, a green light emitting diode to indicate safe passage through an intersection; a yellow light emitting diode to indicate another emergency vehicle is concurrently trying to preempt the same intersection; and a red light emitting diode to indicate there is no preemption at an intersection being approached.

26. An emergency vehicle traffic control system according to Claim 6 in which said intersection control module include preemption of pedestrian lights to optimize preemption around pedestrians.

27. An emergency vehicle traffic control system according to Claim 26 in which said intersection control module disables pedestrian call buttons at said intersection being approached

by an emergency vehicle to optimize preemption around pedestrians.

28. An emergency vehicle traffic control system according to Claim 27 in said intersection control module disables pedestrian call buttons when emergency vehicles are within a predetermined distance from an intersection.

29. An emergency vehicle traffic control system according to Claim 26 in which said intersection control module optimizes preemption of traffic signals to minimize disruption of normal traffic flow.

30. An emergency vehicle traffic control system according to Claim 29 in which said intersection control module monitors phasing at said intersection and optimizes said traffic signals and time-to-clear said intersection.

31. An emergency vehicle traffic control system according to Claim 22 in which said in-vehicle display includes an intelligent display of location and direction of all emergency vehicle in an area to provide collision avoidance.

32. An emergency vehicle traffic control system according to Claim 31 in which said intelligent display of location and direction is an overlay on a map.

33. An emergency vehicle traffic control system according to Claim 32 in which said intelligent display is mounted in a dashboard of said emergency vehicle and includes visual

indication of possible collision.

34.   An emergency vehicle traffic control system according to Claim 33 in which said visual indication of possible collision comprises blinking indicator on said display.

35.   An emergency vehicle traffic control system according to Claim 33 in which said intersection controller program is embedded into an existing intersection controller.

36.   An emergency vehicle traffic control system according to Claim 34 in which said in-vehicle transponder includes a program embedded in an on-board computer.

37.   An emergency vehicle traffic signal preemption and control method comprising;

receiving emergency vehicle critical data at an intersection transceiver;

processing said emergency vehicle critical data in an intersection digital communication control module;

activating a traffic light controller by an output from said intersection digital communication control module;

preempting all traffic and pedestrian lights at an intersection to stop all vehicle and pedestrian traffic at said intersection;

monitoring the status of said traffic light controller, traffic lights and pedestrian lights at said intersection;

transmitting said status information monitored to said

emergency vehicle;

displaying the status of said intersection and other emergency vehicles in said emergency vehicle;

whereby said emergency vehicle traffic light preemption method operates to control the flow of vehicle and pedestrian traffic at an intersection autonomously to allow safe passage of emergency vehicles.

38. The method according to Claim 37 including;

collecting critical data about said emergency vehicle in an on-board diagnostic circuit;

processing said critical data in a vehicle digital control module;

transmitting said emergency vehicle critical data to said transceiver at said intersection.

39. The method according to Claim 37 including;

activating an audio alarm at said intersection to alert pedestrians of the approach of an emergency vehicle.

40. The method according to Claim 39 in which said activation of said audio alarm comprises activating an audio alarm circuit to transmit a predetermined audio signal.

41. The method according to Claim 40 in which said transmission of said audio signal comprises transmitting said audio signal to a loudspeaker at each corner of said intersection.

42. The method according to Claim 37 in which said step of displaying information about the status of an intersection in said emergency vehicle comprises activating one of a plurality of colored LEDs.

43. The method according to Claim 42 in which said activating one of a plurality of LEDs comprises activating a red LED to indicate a conflict with another emergency vehicle approaching an intersection; activating a yellow LED to indicate said intersection is preempted or activating a green LED to indicate preemption of said intersection is detected.

44. The method according to Claim 12 including providing ingress and egress navigation data to said emergency vehicles from Global Positioning System (GPS) data.

45. The method according to Claim 45 in which said pedestrian call buttons are disabled when said emergency vehicle is within a predetermined distance from said intersection.

46. The method according to Claim 46 in which all pedestrian call buttons at each corner of said intersection are disabled to stop all pedestrian traffic.

47. The method according to Claim 46 in which all pedestrian call buttons at each corner of said intersection are disabled to stop all pedestrian traffic.

48. The method according to Claim 37 in which said step of

preempting traffic lights comprises preempting said traffic light to optimize disruption of normal traffic flow.

49. The method according to Claim 48 in which said traffic lights are preempted to optimize time-to-clear said intersection.

50. The method according to Claim 4 in which warning displays indirectly activated by data from a GPS.

51. The method according to Claim 15 including an on-board diagnostic computer.

52. The method according to Claim 27 in which said intersection central controls pedestrian flow at said intersection.

53. The method according to Claim 10 in which said central operation center is a traffic control center.

54. The method according to Claim 35 in which said embedded program is embedded in programmable firmware.

55. The method according to Claim 38 in said embedded program is integrated in a computer operation system.

56. The method according to Claim 18 in which navigation data to control said warning display is accurate ingress and navigation data from said emergency vehicles.

57. The method according to Claim 56 in which said accurate ingress and egress data from said emergency vehicles is Global Positioning System data.